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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
THOMAS, BRANDI N	
ART UNIT	**PAPER NUMBER**
2873	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/726,733	LIANG, JUNZHONG	
	Examiner	Art Unit	
	Brandi N. Thomas	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9 and 12-31* is/are rejected.

7)☒ Claim(s) *7,8,10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *Detailed Action*.

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 102

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Simon et al. (5599340).

Regarding claim 29, Simon et al. discloses, in figures 1 and 2, a device for determining a refractive correction for an eye, the device comprising a soft-ware module for processing at least one measurement of the eye to provide the refractive correction of the eye (col. 4, lines 29-33 and col. 5, lines 29-34).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 9, 12-28, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simon et al. (5599340) in view of Wirth (2002/0030824 A1).

Regarding claim 1, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, the method comprising: measuring an optical error of the eye (col. 4, lines 25-33); calculating at least one image quality parameter based on the measured optical error of the eye (col. 4, lines 37-44); and forming a plan for refractive correction of the optical error, based on the calculated image quality parameter (col. 5, lines 29-34) but does not specifically disclose calculating a parameter for a selected spatial frequency or range of spatial frequencies. Wirth disclose calculating a parameter for a selected spatial frequency or range of spatial frequencies (section 0058). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Simon et al. with the spatial frequencies of Wirth for the purpose of measuring the local phase distortion in the corresponding sample of incident light (section 0058).

Regarding claims 2 and 30, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein measuring the optical error (col. 4, lines 25-33) but does not specifically disclose measuring at least one wavefront aberration with a wavefront of light passing through the optical components of the eye, using a wavefront sensor. Wirth discloses measuring at least one wavefront aberration with a wavefront of light passing through the optical components of the eye, using a wavefront sensor (section 0058). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Simon et al. with the wavefront sensor of Wirth for the purpose of deriving a measure of phase distortion without ambiguity (section 0059).

Regarding claim 3, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, but does not specifically disclose wherein the wavefront

aberration is measured with the pupil of the eye having a diameter of between about 4 mm and about 6 mm. Wirth discloses wherein the wavefront aberration (distortion) is measured with the pupil of the eye (section 0058) but does not specifically disclose the wavefront aberration having a diameter of between about 4 mm and about 6 mm. It is obvious to one having ordinary skill in the art at the time the invention was made to set a specific diameter for the wavefront aberration, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum range or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 233). It would have been obvious to one having ordinary skill in the art at the time the invention was made to set a specific diameter for the wavefront aberration for the purpose of the distortion being a minute quantity.

Regarding claims 4, 23, and 31, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein calculating at least one image quality parameter comprises calculating at least one modulation transfer function (col. 4, lines 29-34).

Regarding claim 5, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein calculating at least one modulation transfer function comprises calculating a plurality of modulation transfer functions corresponding to a plurality of potential refractive corrections (col. 4, lines 45-51).

Regarding claim 6, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein forming a plan for refractive correction comprises selecting one of the potential refractive corrections, wherein the selected refractive correction corresponds to a highest modulation transfer function of the plurality of modulation functions (sections 0058 and 0059) but does not specifically disclose spatial frequency. Wirth disclose

calculating a parameter for a selected spatial frequency or range of spatial frequencies (section 0058). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Simon et al. with the spatial frequencies of Wirth for the purpose of measuring the local phase distortion in the corresponding sample of incident light (section 0058).

Regarding claims 9 and 24, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein calculating at least one image quality parameter (col. 4, lines 37-44) but does not specifically disclose calculating the image quality parameter comprises calculating at least one modified Strehl ratio. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include calculating the image quality parameter comprises calculating at least one modified Strehl ratio for the purpose of the ratio use in adaptive corrective systems by observing peak intensity at the detection plane an imaging system from a point source compared to the theoretical maximum peak intensity of a perfect imaging system working at the diffraction limit.

Regarding claims 12-15, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, but does not specifically disclose wherein the selected spatial frequency comprises about 30 cycles/degree, about 37.5 cycles/degree, about 48 cycles/degree, and 60 cycles/degree. Wirth discloses spatial frequencies (section 0058) but does not specifically disclose wherein the selected spatial frequency comprises about 30 cycles/degree. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention to include wherein the selected spatial frequency comprises about 30 cycles/degree, since it has been held that discovering an optimum value of a result

effective variable involves only routine skill in the art (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)).

Regarding claims 16-18 and 25, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, but does not specifically disclose wherein the selected range of spatial frequency comprises about 0 cycles/degree to about 60 cycles/degree, about 20 cycles/degree to about 60 cycles/degree, and about 0 cycles/degree to about 80 cycles/degree. Wirth discloses spatial frequencies (section 0058) but does not specifically disclose wherein the selected range of spatial frequency comprises about 0 cycles/degree to about 60 cycles/degree, about 20 cycles/degree to about 60 cycles/degree, and about 0 cycles/degree to about 80 cycles/degree. It is obvious to one having ordinary skill in the art at the time the invention was made to include wherein the selected range of spatial frequency comprises about 0 cycles/degree to about 60 cycles/degree, about 20 cycles/degree to about 60 cycles/degree, and about 0 cycles/degree to about 80 cycles/degree, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum range or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 233).

Regarding claim 19, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein forming a plan for refractive correction comprises calculating an ablation pattern for a corneal tissue of the eye, based at least partly on the calculated image quality parameter (col. 5, lines 29-34).

Regarding claim 20, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, further comprising ablating the corneal tissue of the eye according to the ablation pattern (col. 4, lines 45-48).

Regarding claim 21, Simon et al. discloses, in figures 1 and 2, a system for determining a refractive correction for an eye, the system comprising: measuring an optical error of the eye (col. 4, lines 25-33); a processor for generating a refractive corrective pattern based at least in part on an image quality parameter based on the measured optical error of the eye (col. 4, lines 37-44); and forming a plan for refractive correction of the optical error, based on the calculated image quality parameter (col. 5, lines 29-34) but does not specifically disclose a sensor and calculating a parameter for a selected spatial frequency or range of spatial frequencies. Wirth disclose a sensor (1) (section 0058) and calculating a parameter for a selected spatial frequency or range of spatial frequencies (section 0058). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Simon et al. with the spatial frequencies of Wirth for the purpose of measuring the local phase distortion in the corresponding sample of incident light (section 0058).

Regarding claim 22, Simon et al. discloses, in figures 1 and 2, a system for determining a refractive correction for an eye but does not specifically disclose wherein the sensor comprises a wavefront sensor. Wirth discloses wherein the sensor comprises a wavefront sensor (1) (section 0058). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Simon et al. with the sensor of Wirth for the purpose of deriving a measure of phase distortion without ambiguity (section 0059).

Regarding claim 26, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, wherein the refractive correction pattern comprises an ablation pattern of laser energy for ablation of a corneal tissue of the eye so as to correct the measured optical error (col. 5, lines 29-34).

Regarding claim 27, Simon et al. discloses, in figures 1 and 2, a method for determining a refractive correction for an eye, the system further comprising a laser system (10) for directing laser energy onto the corneal tissue of the eye to achieve the generated ablation pattern (col. 3, lines 54-65).

Regarding claim 26, Simon et al. discloses, in figures 1 and 2, a system for correcting an optical error of an eye, the system comprising: measuring an optical error of the eye (col. 4, lines 25-33); a processor for generating a refractive corrective pattern based at least in part on an image quality parameter based on the measured optical error of the eye (col. 4, lines 37-44); and forming a plan for refractive correction of the optical error, based on the calculated image quality parameter (col. 5, lines 29-34); and a laser system (10) for directing laser energy onto the corneal tissue of the eye to achieve the generated ablation pattern (col. 3, lines 54-65) but does not specifically disclose a sensor and calculating a parameter for a selected spatial frequency or range of spatial frequencies. Wirth disclose a sensor (1) (section 0058) and calculating a parameter for a selected spatial frequency or range of spatial frequencies (section 0058). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the device of Simon et al. with the spatial frequencies of Wirth for the purpose of measuring the local phase distortion in the corresponding sample of incident light (section 0058).

Allowable Subject Matter

5. Claims 7, 8, 10, and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim(s), in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in claim(s) 7, 8, and 10, wherein the claimed invention comprises, in claims 7 and 8, wherein forming a plan for refractive correction comprises selecting one of the potential refractive corrections, wherein the selected refractive correction corresponds to a largest total volume modulation transfer function of the plurality of modulation functions, over the selected range of spatial frequencies; in claim 10, wherein calculating at least one modified Strehl ratio comprises calculating a plurality of modified Strehl ratios corresponding to a plurality of potential refractive corrections within the selected range of spatial frequencies comprising about 0 cycles/degree to about 60 cycles/degree, as claimed.

Response to Arguments

6. Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandi N. Thomas whose telephone number is 571-272-2341. The examiner can normally be reached on Monday - Thursday from 6-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brandi N Thomas
Examiner
Art Unit 2873

BNT

RICKY MACK
SUPERVISORY PATENT EXAMINER